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Sellars and Quine on Abstracta in Scientific Ontology

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Abstract

Wilfrid Sellars and Willard Van Quine long disagreed over the nature of ontological commitment in scientific inquiry. Particularly, they disagreed over whether abstract entities such as numbers, sets, or classes should be admitted into scientific ontology. In Quine's view, positing such platonic entities is necessary in order for scientific inquiry to progress and for scientific knowledge to increase. Sellars, on the other hand, sees such a view as a form of platonic realism and eschews it in favor of a more austere nominalism about the ontological status of abstracta. I summarize the reasons for each philosopher's view, drawing on a dialogue between them regarding the ontological status of abstracta. I argue that Quine's justifications for his pragmatically-based realism do little to evade Sellars' charge that such a view commits one to an empirically unjustifiable platonic ontology. In Sellars' view, an adequate philosophy of science requires an adequate philosophy of mind, and this implies that we cannot locate unobservable platonic abstracta on an ontological continuum with the unobservable theoretical entities posited in scientific theories (e.g., neutrinos or positrons). Those who are committed to the ideals of scientific realism and methodological naturalism must grapple with the question Sellars posed to Quine: "if sets are basic objects, how does the mind get in touch with them?"

1. Quine's Pragmatism About the Existence of Abstracta

In the late 1970s and early 1980s Sellars and Quine exchanged arguments (via correspondence and articles) on an array of topics related to behaviorism, meaning, and language. Of particular interest is a short dialogue regarding the ontological status of abstract sets.¹

In a letter to Quine, Sellars expresses his fundamental disagreement with Quine on the ontological status of abstracta in clear terms:

¹ Although Sellars begins the dialogue by restricting his discussion of abstracta to sets, he later makes it clear that he also has in mind such things as numbers, objects, attributes, and even propositions.

I simply do not see how to fit platonic objects (classes and sets) into a naturalistic framework. Bluntly put: If sets are basic objects, how does the mind get in touch with them?

Quine's view on positing the existence of such abstracta is primarily motivated by a thoroughgoing pragmatism regarding the progress of science. Although he identified himself as a nominalist and famously advocated for a "desert landscape" approach to ontology, Quine was always clear that an ontological commitment to abstracta was necessary in order to meet the ordinary needs of scientific practice.² In his view, we can effectively treat abstracta as a "useful myth" without becoming mired in the traditional philosophical problems associated with the existence of such entities in nature. The positing of such things as numbers and sets is not justified by philosophical argumentation, then, but rather in terms of the fruitfulness of science.³ As Quine saw it, knowledge consists of interlocking webs of theories, and "science is a continuum of common sense" (Quine, 52). In epistemic terms, the myths of abstracta are to be judged in the same way as other myths (i.e., "physical objects and gods")—namely, in terms of their ability to help "predict future experience in the light of past experience" and, in so doing, "expedite our dealings with sense experiences" (52).

Quine's response to Sellars' "bluntly put" question about how the mind gets in touch with abstract objects such as sets relies on these standard Quinean principles. He admits that he is ultimately driven to a realist position regarding sets because set theory can establish the continuity of the real numbers. In his (1980) view, "without this we do not, perhaps, have a mathematics adequate to the ordinary needs of natural science" (28).

In response to the question of how the mind "gets in touch" with sets, Quine claims that our knowledge of unobservables relies on a web of theories that exist on a continuum with common sense experience. Turning the discussion back to Sellars, Quine's (1980) reply is another question:

"How does the mind get in touch with neutrinos?" What we have is a ponderous theory consisting of interlocking laws and concepts. It is in contact with sensory evidence only at its edge. The doctrines of elementary particles and spin occupy a remote part of this theoretical structure, and so do the doctrines of real

² See Quine; "Two Dogmas of Empiricism," "On What There Is," and "Reference" in *Quintessence: Basic Readings from the Philosophy of W.V. Quine* (cited in sources).

³ Quine has other stated reasons for positing abstract objects (e.g., a desire to avoid modal operators in truth-functional statements), but they are not relevant for the exchange under discussion.

numbers and sets. Epistemologically, sets differ from neutrinos only in being somewhat less analogous to observable bodies. (28)

2. Sellars' Nominalist Naturalism About the Nonexistence of Abstracta

The topic of abstract entities is a recurring theme throughout Sellars' writings. In contrast to Quine's fairly straightforward brand of pragmatism regarding the role of such entities in scientific ontology, Sellars discusses a host of philosophical issues that arise when it comes to explicating our supposedly 'given' knowledge of them. In his view, since there are no such "things" as universals in the world, the idea that platonic abstracta can serve as a foundation for an empirical science of nature is a myth. Sellars' view is that we should analyze the meaning of statements that contain references to abstracta according to the role that those statements and abstract terms play in particular contexts. He deploys a series of theoretical devices (i.e., dot-quote notation, 'Jumblese,' distributive singular terms) to develop a nominalist theory of meaning that avoids universal terms in favor of names of particulars in particular contexts. While a summary of Sellars' nominalism is beyond the scope of this essay, his relevant claims regarding the existence of abstracta are that 1) admitting them into our scientific ontology introduces a host of coherence and justification issues and that 2) a nonfoundationalist, nominalist approach to scientific knowledge can account for the use of abstract terms without ontologically committing to the existence of their referents.

Sellars' (1980) response to Quine's claim that sets exist on an epistemic continuum with neutrinos is that such a "Duhemian ploy" is a "facile gambit" that misses a crucial distinction between these two types of unobservable entities. The distinction is that the theory-whole of science offers a "causal account of the *specifics* of the hook-up" between micro-physical particles and experience. However,

[t]his is not the case with such terms as "number," "class," "attribute," and "proposition." (24)

Sellars (1980) then concludes with a remark that, in addition to highlighting his disagreement with Quine, sheds light on his own conceptual strategy when it comes to scientific naturalism:

This fact introduces a radical discontinuity into Quine's Continuum, one which has important consequences for the problem of abstract entities, for ontology, and, above all, for the philosophy of mind. (24)

Given that abstract entities do not, in principle, have any causal connection to experience, Sellars (1975) takes seriously Kant's question of how it is possible that knowledge of nature has a conceptual structure (285). The question is not only

philosophical but also empirical, and Sellars thinks that its answer lies in developing a more adequate philosophy of mind along nominalist lines. Embracing platonic realism, in his view, commits us to the so-called ‘Myth of the Given’ in which the world is presupposed to have a categorical structure that is imprinted on the mind as a seal is imprinted on wax.

3. Nominalism or Realism?

In Quine’s final contribution to the dialogue, he acknowledges the “important difference” between abstracta and the posits of physical theory—namely, that in principle, the former have no causal connection to sense experience. Here, he seems to acquiesce to Sellars’ position somewhat by stating that we should seek out connections between sentences that refer to abstracta and “sentences that are more sensitive to observational evidence.”

However, Quine does not specify how the former types of sentences might be distinguished from the latter, although (as Sellars often pointed out) such a task is fraught with logical pitfalls. Although the point merits further discussion, let us leave it aside for the moment and examine what Quine has in mind in terms of seeking out the (supposed) connections between sentence-types:

An understanding of the development of scientific language in the individual and in society should help to illuminate those connections, and I have been at some pains to speculate along those lines.

(It is unfortunate that Quine does not elaborate on this point, since it is difficult to see how it is relevant to the issue of ontological commitment to abstracta. Historical optimism about the fruitfulness of science is at best a peripheral consideration when considering the coherence criteria for scientific ontologies about things in the world).

Quine concludes by noting the irony of finding himself arguing against nominalism in favor of realism, but reiterates that his pragmatic concerns about the progress of science prevent him from “fighting the good fight shoulder to shoulder with Sellars.” Although the discussion ended on this note, it is not difficult to see the fundamental differences in approach between the two philosophers when it comes to ontological commitment.

Conclusion

Sellars (1965) once remarked that Quine was committed to the “notion of a presuppositionless mode of reference” that “involves no commitment to something’s being the case” (113) and characterized such an approach as merely another version of the so-called ‘Myth of the Given.’ In terms of the debate over nominalist and realist approaches to abstracta in scientific ontology, it seems that Quine’s articulation of “observational evidence” remains vague, and his pragmatic reasons for positing abstracta venture far from the specific observational contexts that are supposed to be the proper domain of scientific inquiry.

Sellars, on the other hand, remained convinced that since abstracta are not in nature, an explanatory account of the referents of abstract terms should be developed via a nominalist approach to the philosophy of mind. How the mind understands abstracta is to be explained on the level of (the meaning of) statements, not a mythical conception of some given reality. This takes us to an analysis of the use of statements in particular contexts (i.e., functional role semantics), and it is this sort of strategy that Sellars thinks can help scientific knowledge move beyond platonic realism about abstracta.

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